THREE NEW SPECIES AND TWO NEW SUBSPECIES OF ERIOSOMATINAE (HOMOPTERA: APHIDOIDEA: PEMPHIGIDAE) FROM CHINA*

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Abstract The present paper describes 3 new species and 2 new subspecies, viz: *Colophina arctica* Zhang *et* Qiao sp. nov., *Tetraneura polychorema* Zhang, sp. nov. and *T. ulmicema* Zhang, sp. nov., *Kaltenbachiella pallida dongtaiensis* Zhang, ssp. nov. and *Tetraneura capitatatus agropyricena* Zhang, ssp. nov. All the type specimens are desposited in the Institute of Zoology, Academia Sinica.

Key words Aphidoidea, Pemphigidae, Eriosomatinae, new species, new subspecies

***Colophina arctica* Zhang *et* Qiao sp. nov.** (fig. 1)

Apterous viviparous females 'Dorsal of head with 4～5 pairs of wax plates, pronotum with a pair of spinal wax plates and 1～2 pairs of marginal wax plates. Abdominal tergites Ⅰ～Ⅶ each with 2 pairs of spinal wax plates, 1～2 pairs of pleural wax plates and 2～4 pairs of marginal wax plates. Tergite Ⅷ bears a pair of small wax plates, each of which contains 10～15 small round wax cells.

The numbers of hairs 4 cephailic hairs, dorsal of head with 10 hairs, pronotum with 6～8 spino-pleural hairs, 2～4 marginal hairs; abdominal tergites Ⅰ～Ⅴ each with 4～8 spinal hairs, 4～6 pleural hairs and 2～4 marginal hairs; tergites Ⅵ～Ⅶ each with 4～6 marginal hairs, tergite Ⅷ with 2 short hairs. Antennal segment Ⅲ with 7 or 8 hairs; lst tarsal segments chaetotaxy: 2, 2, 2. Cauda: 8～12, anal plate: 25～35, genital plate: 26～28.

Measurements (in mm) Body 2.000～3.300 in length, 1.100～1.600 in width; antennae 0.800, segments Ⅰ～Ⅵ: 0.081, 0.078, 0.290, 0.093, 0.139, 0.116+0.020; ultimate rostral segment 0.260; hind femur 0.480, hind tibia 0.670, 2nd hind tarsal segment 0.200.

The new species is related to *Colophina arma* Aoki and *C. mostrifica* Aoki, but differs from them in: abdominal tergite Ⅳ with 10～16 wax plates (the latters: 17～24);

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antennal segment Ⅵ as long as segment Ⅲ (the latters: longer); antennae 4-or 5-segmented (the latters: 6-segmented).

Holotype Apterous viviparous female: No. 6623-1-2-4, Oct. 18, 1977, Beijing City (Sanpu 40.3°N, 116.0°E, 800 m), by Wang Linyao and Zhong Tiesen; on *Clematis brevicaudata* DC.; paratypes 120 apterous viviparous females, 26 alate viviparous females, 1 first instar larva, 35 second instar larva: No. 6623, other data same as holotype.

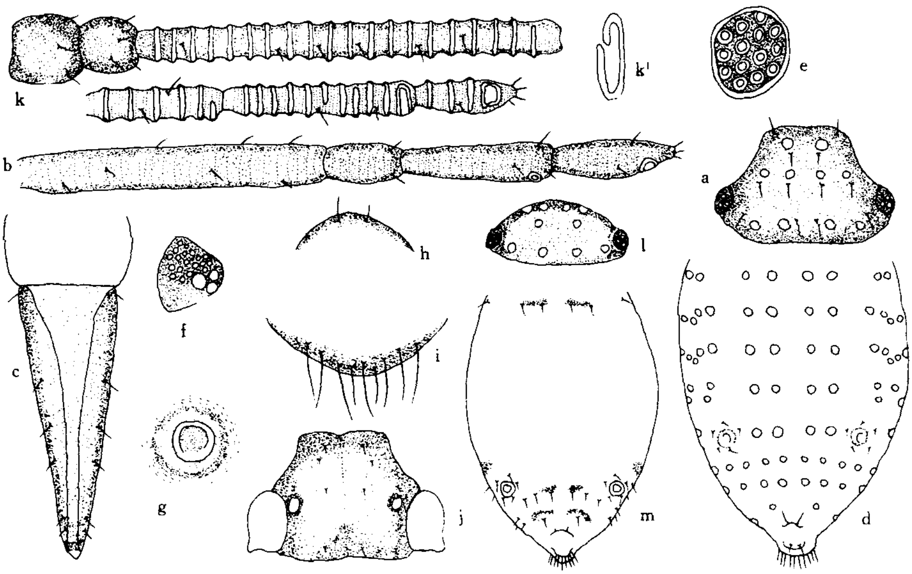


fig. 1 *Colophina arctica* Zhang *et* Qiao, sp. nov.

Apterous viviparous females: a. dorsal view of head, b. antennae, c. ultimate rostral segment, d. dorsal view of abdomen, e. dorsal wax plates, f. eyes, g. siphunculi, h. cauda, i. anal plate;

Alate viviparous females: j. dorsal view of head, k. antennae, k'. secondary rhinarium, l. dorsal view of head, m. dorsal view of abdomen.

***Tetraneura polychorema* Zhang, sp. nov.** (fig. 2)

Apterous viviparous females Vertex with a pair of small marginal wax plates, each of which contains 5～7 wax cells; pro-, meso-and metanotum each with a pair of marginal wax plates, each of the plate contains 16～35 wax cells; abdominal tergites I ～Ⅶ each bear a pair of marginal wax plates, each plate with 10～14 wax cells.

Numbers of hairs Dorsal of head bears 78～84 hairs, abdominal tergite Ⅷ with 10 hairs; hairs on antennal segmets I ～Ⅵ: 5, 22 or 23, 17～19, 10 or 11, 28～35, 6～10, respectively; lst tarsal segments each with 8 or 9 hairs; cauda: 2, anal plate: 32～41.

Measurements (in mm) Body 2.048 in length, 1.500 in width; antennae 0.621,

segments Ⅰ～Ⅵ: 0.015, 0.092, 0.099, 0.060, 0.239, 0.062; ultimate rostral segment 0.181; hind femur 0.521; hind tibia 0.588; 2nd hind tarsal segment 0.101.

The new species differs from *Tetraneura yezoensis* Matsumura in: marginal wax plates poly-cells (the latter: single-cell); antennae 6-segmented (the latter: 5-segmented); length in proportion of segments Ⅲ～Ⅵ: 100, 61, 241, 63 (the latter: Ⅲ～Ⅴ: 100, 150, 65); abdominal tergite Ⅷ with 10 hairs (the latter: 4 hairs); anal plate with 36～38 hairs (the latter: 8 hairs).

Holotype　Apterous viviparous female: No. 8708-1-2-1, Sep. 29, 1986, Gansu Province (Min County 34.4° N, 104.0°E, 2 300 m), by Zhang Guangxue, on Graminae; paratypes 1 apterous viviparous female, 2 4th instar alate larva, 1 3rd instar larvae: No. 8708, other data same as holotype.

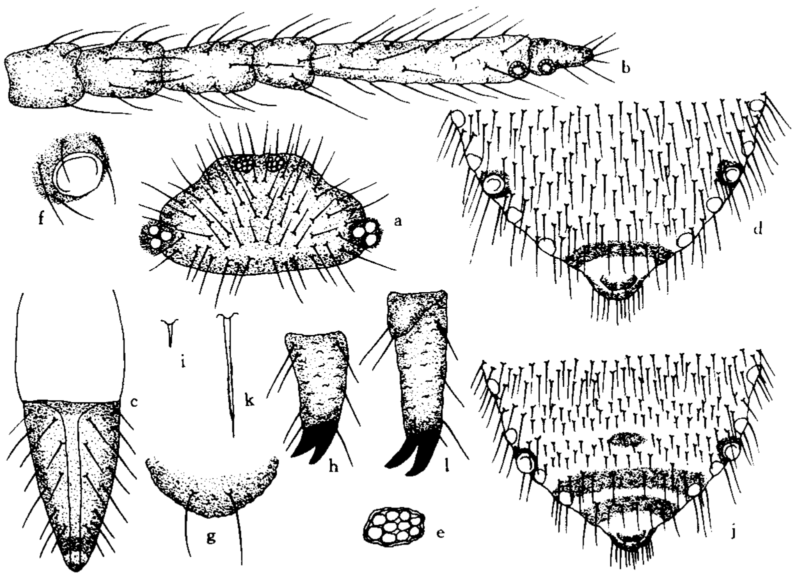


fig. 2　*Tetraneura* (*Tetraneua*) *polychorema* Zhang, sp. nov.

Apterous viviparous females: a. dorsal view of head, b. antennae, c. ultimate rostral segment, d. dorsal view of abdomen, e. dorsal wax plates on abdomen, f. siphunculi, g. cauda, h. tarsi, i. dorsal hair;

Alate viviparous females: j. dorsal view of abdominal tergites Ⅳ～Ⅶ, k. dorsal hair, l. tarsi.

***Tetraneura ulmicema* Zhang, sp. nov.** (fig. 3)

Alate fundatrigenia　Abdominal tergites Ⅰ～Ⅶ each with a pair of small marginal wax plates, each of which contains 7 or 8 wax cells; tergites Ⅰ～Ⅱ each with a pair of spinal wax plates, each plate with 12～14 wax cells, spinal wax plate on tergite Ⅲ～Ⅶ inconspicuous.

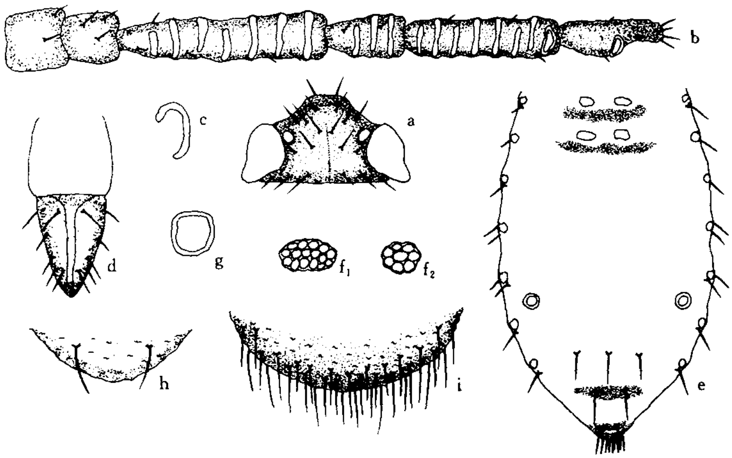


fig. 3 *Tetraneura (Tetraneura) ulmicema* Zhang, sp. nov.

Alate fundatrigenia: a. dorsal view of head, b. antennae, c. secondary rhinarium, d. ultimate rostral segment, e. dorsal view of abdomen, f_1. dorsal wax plate on abdomen, f_2. marginal wax plates on abdomen, g. siphunculi, h. cauda, i. anal plate

Numbers of hairs 2 cephalic hairs, dorsal hairs of head 18, abdominal tergites Ⅰ～Ⅶ each with 2～4 marginal hairs, spino-pleural hairs on tergites Ⅰ～Ⅵ shorter, tergite Ⅶ with 3 long spinal hairs, tergite Ⅷ with 2 hairs; hairs on antennal segments Ⅰ～Ⅵ: 2 or 3, 3 or 4, 6, 2, 5, 2+4 or 5; lst tarsal segments chaetotaxy: 2, 2, 2. Cauda: 2, anal plate: 20～22.

Measurements (in mm) Body 2.278 in length, 1.088 in width; antennae 0.743, segments Ⅰ～Ⅵ: 0.042, 0.049, 0.176, 0.065, 0.134, 0.063+0.023; ultimate rostral segment 0.090; hind femur 0.361, hind tibia 0.559, 2nd hind tarsal segment 0.118.

The new species is similar to *Tetraneura ulmi* (L.), but differs from the latter in alate fundatrigenia: secondary rhinarium on the base of antennal segment Ⅴ near the base (the latter: far away the base), primary rhinaria on segment Ⅵ regular, nonforked (the latter: irregular, forked), processus terminalis 0.36× as long as the base of antennal segment Ⅵ (the latter: 0.20×), anal plate with 20～22 long hairs (the latter: 6 hairs).

Holotype Alate fundatrigenia: No. Y1684-1-5-1, June 15, 1979, Ningxia Hui Autonomous Region (Yinchuan City, 38.4°N, 106.2°E, 1 300 m), by Gao Zhaoning; on *Ulmus glabra* Huds.; paratypes 18 alate fundatrigenia: other data same as holotype.

Kaltenbachiella pallida dongtaiensis **Zhang ssp. nov.** (fig. 4)

Apterous viviparous females　Dorsal of head with 2 pairs of wax plates, notum of each thoracic and abdominal tergites Ⅰ～Ⅵ each with a pair of spinal wax plates, a pair of pleural wax plates and a pair of marginal wax plates, wax plates on tergite Ⅶ inconspicuous; each of wax plates contains 7～12 ellipse and double-ring wax cells.

Numbers of hairs　Hairs on antennal segments Ⅰ～Ⅴ: 2 or 3, 2 or 3, 0 or 1, 3～5, 2 or 3 +3 or 4; lst tarsal segments chaetotaxy: 2, 2, 2. Cauda: 2 or 3, anal plate: 7 or 8, genital plate: 10.

Measurements (in mm)　Body 1.817 in length, 1.126 in width; antennae 0.203, segments Ⅰ～Ⅴ: 0.042, 0.036, 0.038, 0.038, 0.040+0.009; ultimate rostral segment 0.084; hind femur 0.226, hind tibia 0.248, 2nd hind tarsal segment 0.065.

Alate viviparous females　The numbers of hairs: 1 pair of cephalic hairs, 4 pairs of dorsal hairs on head; abdominal tergites Ⅰ～Ⅶ each with 1～2 pairs of marginal hairs, 2～3 pairs of spino-pleural ones, tergite Ⅷ bearing 5 hairs; hairs on antennal segments Ⅰ～Ⅵ: 3, 2, 5～8, 3～5, 4～7, 3+2 or 3 hairs; lst hind tarsal segments chaetotaxy: 2, 2, 2. Cauda: 3, anal plate: 6～8, genital plate: 12～19, genopophyses: 8 or 9.

The new subspecies is closely related to *Kaltenbachiella pallida pallida* (Haliday), but differs from the latter in apterous viviparous females: head with 4 wax plates dorsally (the latter: 8～10), pronotum with 3 pairs of wax plates (the latter: 2 pairs), tergite Ⅷ without wax plate (the latter: 2 wax plates), mid-cells of wax plates inconspinuous; wax cells transversely ellipse (the latter: mid-cells long, wax cells around mid-cells

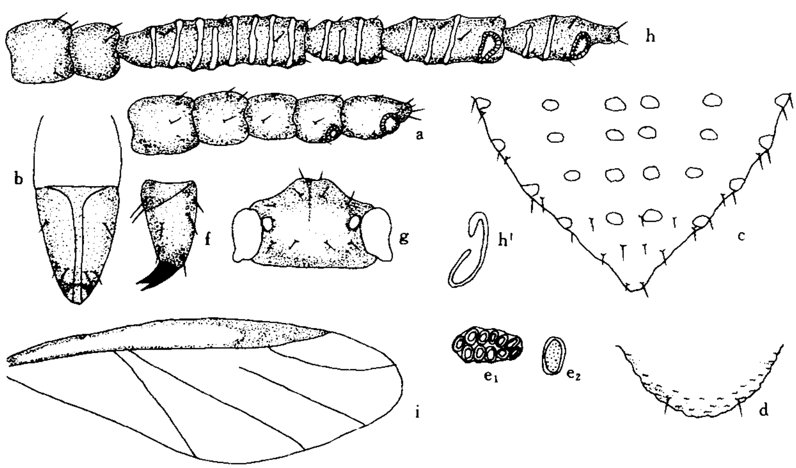


fig. 4　*Kaltenbachiella pallida dongtaiensis* Zhang, ssp. nov.

Apterous viviparous females: a. antennae, b. ultimate rostral segment, c. abdominal tergites Ⅳ～Ⅷ, d. cauda, e_1. dorsal wax plates, e_2. wax cells, f. tarsi; Alate viviparous females: g. dorsal view of head, h. antennae, h'. secondary rhinarium, i. fore wing

round), marginal wax plate as big as spinal and pleural wax plates (the latter: bigger than); antennae 5-segmented (the latter: 4-segmented, rarely 5-segmented); alate viviparous female: primary rhinaria on antennal segment Ⅴ round, ciliated (the latter: narrow ring-like, nonciliated), secondary rhinaria on antennal segments Ⅲ～Ⅵ: 8 or 9, 2 or 3, 3～5, 2 or 3, respectively (the later: 10～12, 3 or 4, 1 or 2, 2 or 3).

Measurements (in mm) Body 1.300 in length, 0.470 in width; antennae 0.420, segments Ⅰ～Ⅵ: 0.041, 0.036, 0.140, 0.052, 0.084, 0.070+0.011; ultimate rostral segment 0.067; hind femur 0.290, hind tibia 0.420, 2nd hind tarsal segment 0.030.

Holotype Apterous viviparous female: No. 7089-1-5-1, Oct. 1986, Jiangsu Province (Dongtai county, 32.8°N, 120.3° E, 50m), by Zhong Tiesen; on *Mentha haplocalyx* (on root); paratypes: 5 apterous viviparous females, 22 alate viviparous females: other data same as holotype.

***Tetraneura capitatatus agropyricena* Zhang, ssp. nov.** (fig. 5)

Apterous viviparous females Dorsum wax plates on head inconspicuous, a pair of wax plates on vertex, pronotum with a pair of spinal wax plates and a pair of marginal wax plates, meso-and metanotum and abdominal tergites Ⅰ～Ⅵ each with a pair of spinal wax plates, a pair of pleural wax plates and a pair of marginal wax plates, each plate with 2～4 wax cells; tergite Ⅶ with a pair of spinal wax plates, each plate with 11～14 wax cells, and a pair of marginal wax plates; wax plate on tergite Ⅷ absent.

Numbers of hairs Dorsal of head with 6 long anterior hairs and 12 short poterior hairs; pronotum with 8 short spinal hairs and 6 long pleural marginal hairs; abdominal tergites Ⅰ～Ⅶ with 12 long marginal hairs and 12 short hairs; tergites Ⅰ～Ⅵ each with 20-24 spino-pleural hairs, tergite Ⅶ with 6 sharp-pointed spino-pleural hairs, 10 marginal hairs (4 acute long marginal hairs among them), tergite Ⅷ with 2 spinal hairs, 6～8 marginal hairs; hairs on antennal segments Ⅰ～Ⅴ: 3, 4 or 5, 3 or 4, 15～18, 2 or 3 + 3 or 4; tarsal segment each with 5～7 hairs; cauda: 3, anal plate: 81-83.

Measurements (in mm) Body 1.933 in length, 1.280 in width; antennae 0.348, segments Ⅰ～Ⅴ: 0.050, 0.055, 0.071, 0.120, 0.038+0.014; ultimate rostral segment 0.097; hind femur 0.201, hind tibia 0.235, 2nd hind tarsal segment 0.059.

The new subspecies differs from *Tetraneura capitatatus capitatatus* Zhang *et* Zhang in: hairs on abdominal tergite Ⅶ sharp-pointed at the apex, except a pair of capitate hairs (the latter: other hairs obtuse at the apex, except a pair of capitate spinal hairs and 2 pairs of capitate marginal hairs).

Holotype Apterous viviparous female: No. 8815-1-1-1, Aug. 1, 1987, Gansu Province (Gangu County, 34.7°N, 105.3° E, 1380m), by Zhang Guangxue; on *Agropyron cristatum* (L.); paratypes 12 apterous viviparous female, other data same as holotype.

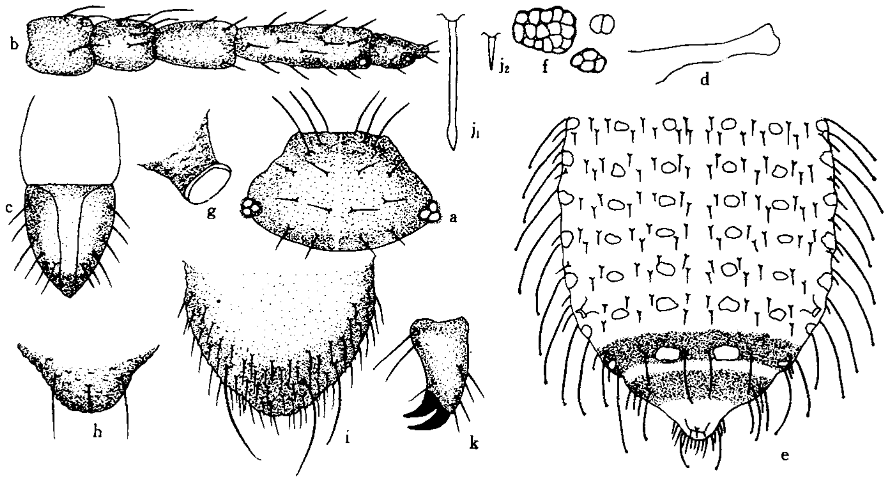


fig. 5 *Tetraneura capitatatus agropyricena* Zhang, ssp. nov.

Apterous viviparous females: a. dorsal view of head, b. antennae, c. ultimate rostral segment, d. mesostrnal furca, e. dorsal view of abdmen, f. dorsal wax plates, g. siphunculi, h. cauda, i. anal plate, j_1. marginal hair on abdomen, j_2. dorsal hair, k. hind tarsal segment.

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中国绵蚜亚科三新种二新亚种记述
（同翅目：蚜总科：瘿绵蚜科）

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摘要　本文记述了中国绵蚜亚科 Eriosomatinae 3 种新和 2 新亚种，即：北扣绵蚜新种 *Colophina arctica* Zhang *et* Qiao，sp. nov.，多室四脉绵蚜新种 *Tetraneura polychorema* Zhang，sp. nov.，食榆四脉绵蚜新种 *T. ulmicema* Zhang，sp. nov.，白卡绵蚜东台新亚种 *Kaltenbachiella pallida dongtaiensis* Zhang ssp. nov. 和钉四脉绵蚜冰草新亚种 *Tetraneura capitatatus agropyricena* Zhang，ssp. nov. 模式标本保存在中国科学院动物研究所。

北扣绵蚜 *Colophina arctica* Zhang *et* Qiao，新种（fig. 1）

本新种与武扣绵蚜 *C. arma* Aoki 和怪扣绵蚜 *C. mostrifica* Aoki 有较近的亲缘关系，不同在于：腹部背片 IV 有 10～16 个蜡片（后者：17～24）；触角节 VI 与节 Ⅱ 等长（后者：长于）；触角 4 或 5 节（后者：6 节）。

正模：无翅孤雌蚜，No. 6623-1-2-4，Oct. 18，1977，北京（三堡 800 m），王林瑶和钟铁森采集；寄主：短尾铁线莲 *Clematis brevicaudata* DC.；副模：120 只无翅孤雌蚜，26 只有翅孤蚜，1 只 1 龄若蚜和 35 只 2 龄若蚜，No. 6623，其它同正模。

多室四脉绵蚜 *Tetraneura polychorema* Zhang，新种（fig. 2）

本新种与瑕夷四脉绵蚜 *T. yezoensis* Matsumura 有较近亲缘关系，不同在于：缘蜡片多室（后者：单室）；触角 6 节（后者：5 节）；触角节 Ⅲ ～ Ⅵ 长度比例：100，61，241，63（后者：Ⅲ ～ Ⅴ：100，150，65）；背片Ⅷ有毛 10 根（后者：4 根）；尾板有毛 36～38 根（后者：8 根）。

正模：无翅孤雌蚜，No. 8708-1-2-1，Sep. 29，1986，甘肃（岷县 2 300 m），张广学采集；寄主：禾本科杂草；副模：1 只无翅孤雌蚜，2 只 4 龄有翅若蚜和 1 只 3 龄若蚜，No. 8708，其它同正模。

食榆四脉绵蚜 *T. ulmicema* Zhang，新种（fig. 3）

本新种与榆四脉绵蚜 *T. ulmi*（L.）较近，不同在于：有翅干雌蚜触角节 V 基部的次生感觉圈靠近基部（后者：远离基部）；触角节 VI 原生感觉规则，不分岔（后者：不规则，分岔）；触角末节鞭部为基部 0. 36（后者：0. 20）；尾板有长毛 20～22 根（后者：6 根）。

正模：有翅正雌蚜，No. Y1684-1-5-1，June 15，1979，宁夏（银川 1 300 m），高兆宁采集；山榆 *Ulmus glabra* Huds；副模：18 只有翅干雌蚜，其它同正模。

白卡绵蚜东台 *Kaltenbachiella pallida dongtaiensis* Zhang，新亚种（fig. 4）

本新种与指名亚种不同在于：无翅孤雌蚜：头部有 4 个背蜡片（后者：8～10 个）；前胸有 3 对背蜡片（后者：2 对）；背片Ⅷ无蜡片（后者：2 个蜡片）；蜡片中胞不明显，周围蜡胞横椭圆形（后者：中胞长形，周围蜡胞圆形）；缘蜡片约于中、侧蜡片同大（后者；缘蜡片大于中、侧蜡片）；触角 5 节（后者：4 节，罕见 5 节）；有翅孤雌蚜：触角节 V 原生感觉圈圆形，有睫（后者：窄环行，无睫）；触角节

Ⅱ～Ⅵ次生感觉圈数：8 或 9，2 或 3，3～5，2 或 3（后者：10～12，3 或 4，1 或 2，2 或 3）。

正模：无翅孤雌蚜，No. 7089-1-5-1. Oct. 1986，江苏（东台 50 m），钟铁森采集；寄主：薄荷 *Mentha haplocalyx*（根部）；副模：5 只无翅孤雌蚜和 22 只有翅孤雌蚜，其它同正模。

钉四脉绵蚜冰草 *Tetraneura capitatatus agropyricena* Zhang，新亚种 (fig. 5)

本新种与指名亚种不同在于：腹部背片Ⅶ除 1 对长缘毛尖端头状，其它各毛尖锐（后者：有 1 对中毛及 2 对缘毛头状，其它各毛顶端钝）。

正模：无翅孤雌蚜，No. 8815-1-1-1，Aug. 1，1987，甘肃甘谷（1 380 m），张广学等采集，寄主：冰草 *Agropyron cristatum*；副模：12 只无翅孤雌蚜，其它同正模。

关键词　蚜总科，瘿绵蚜科，绵蚜亚科，新种，新亚种